

WHAT IS CLAIMED IS:

1. A relaying method of relaying optical signals received from a first optical transmission line to a second optical transmission line, comprising the following steps of:

receiving the optical signals from said first optical line;  
amplifying said optical signals by a first optical amplifier;  
amplifying said optical signals by a second optical amplifier; and  
transmitting said optical signals to said second optical transmission line.

2. The relaying method as described in claim 1, wherein said first optical amplifier and said second optical amplifier are made up with doped fibers, respectively, and both said first optical amplifier and said second optical amplifier are excited by a common exciting light source.

3. The relaying method as described in claim 2, wherein a length of the doped fiber building up said second optical amplifier is longer than that of the doped fiber building up said first optical amplifier.

4. The relaying method as described in claim 2, further comprising the following step of:

processing the optical signals, which are amplified with said first optical amplifier, by an optical part bringing about loss in the optical signal.

5. The relaying method as described in claim 4, wherein said optical part is made of an optical isolator.

6. The relaying method as described in claim 1, further comprising the steps of:

processing the optical signals, which are amplified with said first optical amplifier, by a dispersion compensator; and

amplifying the optical signals, processed with said dispersion compensator, a third optical amplifier.

7. The relaying method as described in claim 6, wherein said first optical amplifier, said second optical amplifier and said third optical amplifier are made up with doped fibers, respectively, and at least two of said first optical amplifier, said second optical amplifier and said third optical amplifier are excited by a common exciting light source.

8. A relaying method of relaying optical signals received from a first optical transmission line to a second optical transmission line, comprising the steps of:

receiving the optical signals from said first optical line;

amplifying said optical signals by means of a first optical amplifier;

processing said optical signals by an optical part bringing about loss in the optical signals;

further amplifying said optical signals by a second optical amplifier; and transmitting said optical signals to said second optical transmission line.

9. The relaying method as described in claim 8, wherein said first optical amplifier and said second optical amplifier are made up with doped fibers, respectively, and both said first optical amplifier and said second optical amplifier are excited by a common exciting light source.

10. A relaying method of relaying optical signals received from a first optical transmission line to a second optical transmission line, comprising the steps of:

receiving the optical signals from said first optical line;  
amplifying said optical signals by a first optical amplifier;  
amplifying said optical signals by a third optical amplifier; and  
transmitting said optical signals to said second optical transmission line,  
wherein a length of said doped fiber is longer than those of said second doped fiber and said third doped fiber, and at least two of said first optical amplifier, said second optical amplifier and said third optical amplifier are excited by a common exciting light source.